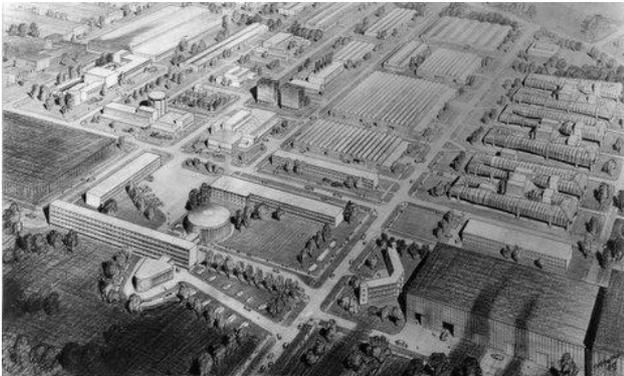


Anniversaries of Change and Closure

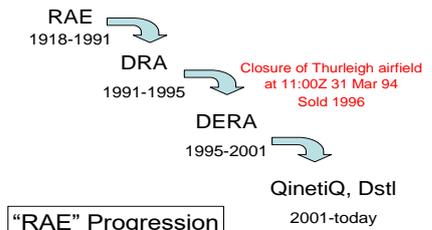


Artist's Impression (c. 1949) of future tunnel site (neg B11354-Bk1A)



Dismantling 8ft tunnel, 2004

RAE Bedford – Some History This year is the 30th anniversary of the closure of the whole Royal Aircraft Establishment (1991), renamed in 1988 as the Royal Aerospace Establishment, and its re-incarnation as part of the Defence Research Agency (DRA). DRA became the even larger Defence Evaluation & Research Agency (DERA) in 1995. DERA itself closed 20 years ago, in 2001, being split into the commercial company QinetiQ and the government Defence Science & Technology Laboratory. All these changes were a result of government policy. Surprisingly, there seem to be no pictures of any ceremony associated with these major changes. We would be interested to hear of anyone's recollections.



“RAE” Progression

RAE formed originally at Farnborough on 1 April 1918, at the same time as the Royal Air Force. Prior to this, it had been known as the Royal Aircraft Factory, part of the Royal Flying Corps created in 1912. Before that there were balloon units at Aldershot and Woolwich. The Factory had to change its name to RAE in 1918 to avoid confusion with the new RAF. Throughout World War I the Factory had been responsible for the design of a number of combat aircraft (eg BE2, SE5) for the RFC and for the establishment of standards for the fledgling aircraft industry.

World War II saw a major increase in research and development activity at Farnborough, as aviation became a crucial part of military operations. As the war drew to a close, the future of the aircraft industry in the UK received priority attention. A secret report to government (ARC7500, *National Requirements for Aeronautical Research and Development*, March 1944) recommended a major expansion of RAE, but there was insufficient space at Farnborough for extra wind tunnels and a new long runway. The site at Bedford was chosen, and announced in 1946, and construction of RAE Bedford began soon after that. It's not possible to put a precise date on this, but an early photo (1947) shows foundations for the 3x3 supersonic wind tunnel, the first tunnel to be built at Bedford. The tunnel was complete and ready for calibration tests in 1952. The re-built Thurleigh airfield started flying operations in 1954. The airfield initially hosted two major research groups: Naval Air Department, and Aero Flight, followed (from 1957) by BLEU. A formal opening of the 8ft tunnel and of RAE Bedford took place on 27 June 1957.

The original concept for RAE Bedford, initially known as the National Aeronautical Establishment (NAE), and independent from Farnborough, included a very extensive wind tunnel test centre (see artist's impression at the top of this page), and a large airfield. In the event, just 5 major tunnels were built, and NAE became part of RAE in 1958.

All Change 1991 and 2001 – Research in progress As RAE made the transition in 1991 to a Research Agency (DRA, then DERA), many major research programmes were in full swing at Bedford. These included wind tunnel tests on the European Fighter Aircraft, EFA, the VAAC flight control programme and exploration of advanced Flight Management systems.

This picture (neg A5837) shows an EFA intake model being tested in the 8ft supersonic wind tunnel for the German industrial partners. Other tests included complex under-wing stores arrangements. In civil aviation research, the 8ft tunnel was also employed to evaluate models of Airbus twin-engine configurations.



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Following major re-engineering at Cranfield, Harrier XW175, shown here in the hover (*neg A5584*), was the primary tool in the VAAC flight control research programme for the next generation of V/STOL combat aircraft. The pilot in the rear seat flew the aircraft via a fly-by-wire computer system, while the safety pilot in the front seat still had the usual conventional controls. The first engagement of the FBW system took place in May 1990. This research led ultimately to the “Unified” control laws adopted for the Lockheed Martin F-35B now in service in the UK and USA.

The cockpit of the BAC 1-11 XX105 flying laboratory (*neg A6663*) was equipped with advanced displays for Civil Avionics research. During its final years the BAC 1-11 was used for Area Navigation and Flight Management System development; for research on integrated air/ground Air Traffic Management using Data Link communication and 4D navigation; and to evaluate integrated cockpit systems to reduce pilot workload. The work was funded by NATS, Eurocontrol and the European Commission and involved system design and development, flight testing and flight demonstrations to international aviation organisations.



By 2001, the flight simulation facilities at Bedford had become very extensive, with the Advanced Flight Simulator and its Large Motion System (used for VAAC, for helicopter agility research and for studies of helicopter operation from ships), the Latch cockpit for civil airliner research, and the early versions of generic combat aircraft cockpits for networked mission simulation.

The Two Sites Today The airfield ceased operations in 1994 (the aircraft fleet moved to Boscombe Down) and was sold in 1996, the bulk to St Modwen (becoming a Business Park, see picture below), the NAD area to Palmer Sport (providing motor racing experiences) and the Enclave to Millennium Studios. Here are some views in 1999 of the still-active research enclave (*neg A11266A*) and the main runway largely covered with cars (*neg A11267A*).



The wind tunnel site is now Twinwoods Business Park. Two of the five big tunnels are still operating, the 13x9 owned by Red Bull and used for Formula One car aerodynamics and the VST used for skydiving. The 8ft tunnel made its last run on 16 Dec 2001, was scrapped in 2002 and dismantled in 2004. The 3x4 supersonic tunnel closed in 2001 and was also dismantled. The 3ft had closed much earlier, with its last run on 30 March 1983.



Twinwoods (Image Barry Tomlinson, P1100647)



Airfield (Image Barry Tomlinson, P1100641)

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